

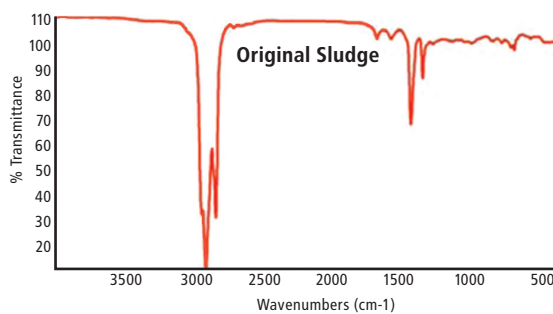
Infrared Spectroscopy – Commercial Application

How do we identify a sludge blocking an offshore pipeline?

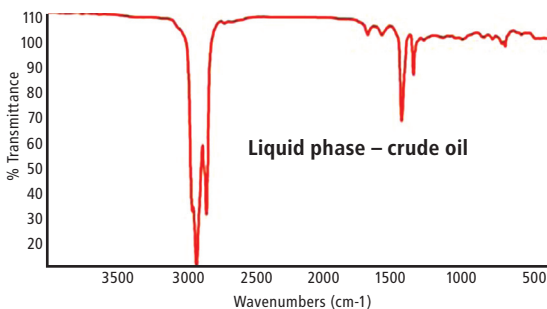
Sludges are often a mixture of a liquid and suspended solid material. First we must determine what the chemical composition of the liquid is using **Infrared Spectroscopy**.

The infrared spectrum of the original sludge identifies it as being mainly crude oil, with no evidence for the presence of any solid material.

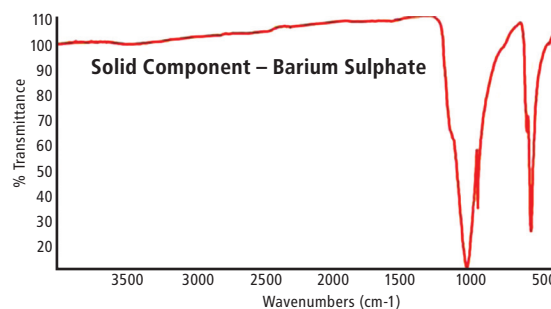
To isolate any possible solid material, the sludge is extracted with an organic chemical which does result in separation of the sludge into two parts, a solvent soluble liquid and a solvent insoluble solid component.



Organic Chemical Extraction



Soluble Liquid



Insoluble Solid

Comparison of the **Infrared Spectra** of the two fractions shows that the sludge is a mixture of **Crude Oil** and **Barium Sulphate** (drilling mud component)